

### What They Do

Before a new product can be produced and sold, an efficient and cost-effective way to manufacture it must be developed. An important member of the team that can make this possible is the Process Development Engineer. These engineers help innovate, develop, and design manufacture production processes that can produce an acceptable product at a cost that can allow the company to make a profit on it.

Process Development Engineers can design entire new production processes, or can modify existing ones to perform more efficiently and produce a product at a lower cost. They must keep detailed records of their work, and may need to persuade the company of a design's benefits. These engineers may oversee the implementation of a new or improved design. They may train technicians in the proper operation of a manufacturing process. They may operate as part of a team and may supervise other staff. These engineers develop manufacturing prototypes. Process Development Engineers may use existing tests or develop new ones to ensure the proper operation of a facility. These engineers often must troubleshoot problems.

Process Development Engineers also take into account the need to meet government regulations for manufacturing.

*Process Development Associates in the biotech industry combine characteristics of Industrial Engineers and Chemical Engineers. Detailed descriptions of these occupations may be found in the Occupational Information Network (O\*NET) at [online.onetcenter.org](http://online.onetcenter.org).*

Important skills, knowledge, and abilities include:

- ▶ Chemistry – Knowledge of the chemical composition, structure, and properties of substances and of the chemical processes and transformations that they undergo. This includes uses of chemicals and their interactions, danger signs, production techniques, and disposal methods.
- ▶ Engineering and Technology – Knowledge of the practical application of engineering science and technology. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.
- ▶ Systems Evaluation – Identifying measures or indicators of system performance and the actions needed to improve or correct performance, relative to the goals of the system.
- ▶ Reading Comprehension – Understanding written sentences and paragraphs in work related documents.
- ▶ Quality Control Analysis – Conducting tests and inspections of products, services, or processes to evaluate quality or performance.
- ▶ Operations Analysis – Analyzing needs and product requirements to create a design.

### Training/Requirements

- ▶ Bachelor or master's degree in the biosciences or in electrical, mechanical, or chemical engineering.
- ▶ Up to two years of related experience.

## Process Development Engineers

# Biotechnology Careers

### What's the California Job Outlook?

While the Bureau of Labor Statistics does not collect data on Process Development Engineers, the occupations listed below are found in the biotechnology industry and have similar duties. The California outlook and wages figures are drawn from all industries and represent occupations comparable to Process Development Engineers.

Standard Occupational Classification	Estimated Number of Workers 2002	Estimated Number of Workers 2012	Average Annual Openings	2005 Wage Range (per hour)
<b>Industrial Engineers</b>				
17-2112	18,600	20,800	670	\$30.00 to \$44.98
<b>Chemical Engineers</b>				
17-2041	2,300	2,600	100	\$33.92 to \$56.57

*These figures do not include self-employment.*

*Average annual openings include new jobs plus openings due to separations.*

*Source: [www.labormarketinfo.edd.ca.gov](http://www.labormarketinfo.edd.ca.gov), Employment Projections by Occupation and OES Employment & Wages by Occupation, Labor Market Information Division, Employment Development Department.*

### Additional Sources of Information

Institute of Industrial Engineers  
(800) 494-0460  
[www.iienet.org](http://www.iienet.org)

American Institute of Chemical Engineers  
(212) 591-7338  
[www.aiche.org](http://www.aiche.org)

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